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INTEGRATED INFORMATION SUPPORT SYSTEM (IISS)
Volume VII - Communications Subsystem
Part 3 - VAX Inter Process Communication Product Specification

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This specification establishes the 'as built' design of the Interprocess Communication Primitives (IPCs).

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FOREWORD

This technical report covers work performed under Air Force Contract F33600-87-C-0464, DAPro Project. This contract is sponsored by the Manufacturing Technology Directorate, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Bruce A. Rasmussen, Branch Chief, Integration Technology Division, Manufacturing Technology Directorate, through Mr. David L. Judson, Project Manager. The Prime Contractor was Integration Technology Services, Software Programs Division, of the Control Data Corporation, Dayton, Ohio, under the direction of Mr. W. F Osborne. The DAPro Project Manager for Control Data Corporation was Mr. Jimmy P. Maxwell.

The DAPro project was created to continue the development, test, and demonstration of the Integrated Information Support System (IISS). The IISS technology work comprises enhancements to IISS software and the establishment and operation of IISS test bed hardware and communications for developers and users.

The following list names the Control Data Corporation subcontractors and their contributing activities:

SUBCONTRACTOR	ROLE
Control Data Corporation	Responsible for the overall Common Data Model design development and implementation, IISS integration and test, and technology transfer of IISS.
D. Appleton Company	Responsible for providing software information services for the Common Data Model and IDEF1X integration methodology.
ONTEK	Responsible for defining and testing a representative integrated system base in Artificial Intelligence techniques to establish fitness for use.
Simpact Corporation	Responsible for Communication development.

Structural Dynamics Research Corporation	Responsible for User Interfaces, Virtual Terminal Interface,and Network Transaction Manager design, development, implementation, and support.
Arizona State University	Responsible for test bed operations and support.

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SECTION 1

SCOPE

1.1 Identification

This specification establishes the 'as built' design of the Interprocess Communication Primitives (IPC's).

1.2 Functional Summary

The IPC's are the lowest level of common services in the IISS. Their function is to supply a standard interface to operating system services normally required by complex application systems. The implementation of these routines, therefore, is highly system dependent.

The services they support are passing messages between two programs, starting and stoping a timer, and responding to a series of asynchronous events.

SECTION 2

DOCUMENTS

2.1 Reference Documents

The following pertinent reference materials are available at the ICAM Program Office.

1. Interim Reports

2. Life Cycle Documents
   (a) ITR620150002U Project Scope
   (b) PMP620150000 Master Plan and Schedule
   (c) SAD620150000 State-of-the-art Review
   (d) SRD620140000 System Requirements Document
   (e) SDS620140000 System Design Specifications
   (f) DS6201430000 Development Specification - Communications Subsystem

The following reference materials are available from Digital Equipment Corporation.

(a) VAX/VMS I/O User's Guide (Volume 1), Order No. AA-M540B-TE
(b) VAX/VMS I/O User's Guide (Volume 2), Order No. AA-M541B-TE
(c) VAX COBOL Language Reference Manual, Order No. AA-H631C-TE
(d) VAX-11 FORTRAN Language Reference Manual, Order No. AA-D034C-TE

2.2 Terms and Abbreviations

All the arguments for the IPC's are described in DS 620140004 for the Communication Subsystem; however, the more important ones are reiterated here.

1. Input Mailbox - the logical name for a section of memory from which a primitive obtains a message that was send to a program

2. Target Mailbox - the logical name for a section of memory into which a primitive stores a message

3. Event Block - a block of contiguous memory, local to a program, into which primitives store system dependent information needed to perform their tasks

SECTION 3

REQUIREMENTS

3.1 Structural Descriptions

The description of each IPC along with its calling sequence, its inputs and its outputs is given is Sections 3.2.7 and 3.5 of the Communication Subsystem Development Specification, DS620140004. Thus, only a list of the IPC's and their functions will be presented here.

3.1.1 Create a Mailbox

The routine CRTMBX creates a mailbox (global storage in memory) through which a program may receive messages from another program executing on the same computer at the same time.

3.1.2 Send a Message to Another Program

The routine SNDMSG sends a message to another program executing on the same computer at the same time by placing it in the input mailbox (memory) allocated to the other program.

3.1.3 Receive a Message from Another Program

The routine RCVMSG records the fact that the program will accept messages sent from other programs to its input mailbox. The routine returns to the program allowing it to execute while other programs send messages.

3.1.4 Get a Message from Another Program

The routine GETMSG removes a message from the input mailbox (memory) of a program and moves it to the given buffer.

3.1.5 Delete a Mailbox

The routine DELMBX removes the capability of receiving messages through the given input mailbox. Whether the memory is released for other uses at this time depends upon the computer and operating system under which IISS runs.

3.1.6 Release an Event Block

The routine RELEVB reinitializes an event block (local program storage) enabling it to be used with other primitives. It is needed to clear an event block when the same event block is used with different target mailboxes.

3.1.7 Start a Timer

The routine SETTIM invokes a timing mechanism that will cause an event when the time interval has elapsed. After noting the time, the routine returns to the program allowing it to continue executing.

3.1.8 Stop a Timer

The routine CNLTIM terminates the timing mechanism initiated by the SETTIM routine.

3.1.9 Wait for an Event to Occur

The routine WAITnn (where nn is the maximum number of events possible) waits for the completion of one of the outstanding requests that are associated with the list of event blocks. The program is suspended until an event occurs.

3.1.10 Terminate a Run

The routine ENDRUN terminates the executing of the program.

3.2 Functional Flow Description

Since the implementation of the IPC's are system dependent, the functional flow description must be described in context of the computer and operating system. The IPC's were implemented on the IBM 3084 under CICS and under MVS. They were implemented on the Honeywell Level 6 under Mod 400 and on the VAX under VMS.

3.3 Interfaces

On the IBM, under CICS, the IPC's were implemented using some CICS command level and some macro level system interfaces. The command level was written in COBOL, while the macro level was in assembler. This mixed mode format was required because not all the necessary functions were available at the command level. There is no mailbox facility under CICS, so the concept of mailbox had to designed and implemented from scratch.

Under MVS, the IPC's were implemented in assembler as one task with different entry points for each routine. Again, there is no mailbox facility under MVS. The design developed for CICS was reimplemented for MVS.

On the Honeywell Level 6, the IPC's were again a mixture of COBOL and assembler because the only interface into the system services is through assembler. The Mod 400 operating system supports a mailbox facility so calls to it were used in the implementation of the IPC's.

The VAX also has a mailbox facility and its system services are accessible through high level languages. Therefore, the IPC's on the VAX were implemented using a conbination of COBOL and FORTRAN.

3.4 Interrupts

This section does not apply to the IPS's.

3.5 Timing and Sequence Description

Timing and sequencing is only relevant to the Wait for an Event to Occur primitive, and then only when it is waiting on more than one event. If more than one event has occurred, the primitive will report to the program the one that has the highest priority based on event number.

3.6 Special Control Features

The Interprocess Communication Primitives do not include any special control features as defined in the ICAM Documentations Standards.

3.7 Storage Allocation

3.7.1 Data Base Definition

3.7.1.1 File Description

The IPC's do not use any files.

3.7.1.2 Table Description

The IPC's do not use any tables.

3.7.1.3 Item and Constant Description

The event block contains two variables that are common across all implementations. The first is the event type which indicates whether the block is being used by an IPC receive message, a timer, or a receive for the Communications Subsystem. The second variable indicates the possible states of the event--no event outstanding, event outstanding but not completed, event completed but not requested by the program.

3.7.2 CPC Relationship

The event block is used with every IPC except ENDRUN and LOCKEF.

3.8 Object Code Creation

To create the IPC's for the CICS environment requires the CICS preprocessor, the COBOL compiler, the Assembler and the standard link editor to create a load module that can be referenced when linking main modules. Except for the CICS preprocessor, the same mechanism applies for creating the IPC load library under MVS.

To create the IPC library on the Honeywell Level 6 requires the COBOL compiler, the Assembler and the standard linker.

To create the IPC library on the VAX requires the COBOL and FORTRAN compilers and the standard linker.

3.9 Adaption Data

The IPC's are system dependent; therefore, they must be reimplemented for each computer and/or operating system.

3.10 Detail Design Description

3.10.1 Main Program List

The following is a list of all "Main Programs" which are modules that are not called by any other module being documented here. These modules are either program entry points or, if they are hooked into another set of programs via subroutine calls, they are the points the external programs can call and therefore enter through. To differentiate between the two types of entry points, look at the individual Module Documentation (section 3.10.8) and look at Module Type for each of the Main Program modules listed. Note whether the routine is a Program, Subroutine, or Function. If it is a Program, it is truly a main program entry point. If not, then it is merely called by other programs not being documented here.

IPC Main Program List

Module Name	Purpose
CNLTIM	CANCEL A TIMER
CRTMBX	CREATE A MAILBOX
DELMBX	DELETE A MAILBOX
ENDRUN	STOP THE PROGRAM
GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
LOCKEF	LOCK EVENT FLAG
RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
RELEVB	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
SETTIM	START A TIMER
SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM
WAIT01	WAIT FOR AN EVENT TO OCCUR
WAIT02	WAIT FOR AN EVENT TO OCCUR
WAIT03	WAIT FOR AN EVENT TO OCCUR

3.10.2 Module List

The following is a list of all the modules being documented here along with their purpose. Each module has a unique name, no matter what language it was written in.

IPC Module List

Module Name	Purpose
CNLTIM	CANCEL A TIMER
CNLTMR	CANCEL THE TIMER
CRTMBX	CREATE A MAILBOX
DELMBX	DELETE A MAILBOX
ENDRUN	STOP THE PROGRAM
ERRFTL	PROCESS FATAL ERROR
ERRPRO	PROCESS ERROR
FREVTF	FREE THE EVENT FLAG
GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
GETPNM	GET PROCESS NAME
LOCKEF	LOCK EVENT FLAG
RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
RDMALF	READ THE MAILBOX FOR EVENT FLAG SET
RELEVB	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
SASGCH	ASSIGN A CHANNEL TO A MAILBOX
SCRTMB	CREATE A MAILBOX
SDEACH	DEASSIGN CHANNEL FROM THE MAILBOX
SDELMB	DELETE THE MAILBOX
SETTIM	START A TIMER
SETTMR	SET A TIMER

IPC Module List

Module Name	Purpose
SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM
SWEVTF	WAIT FOR ONE OF POSSIBLY MANY EVENTS
VALMBE	VALIDATE THAT MAILBOX ALREADY EXISTS
WAIT01	WAIT FOR AN EVENT TO OCCUR
WAIT02	WAIT FOR AN EVENT TO OCCUR
WAIT03	WAIT FOR AN EVENT TO OCCUR
WRTERR	WRITE MESSAGE TO MAILBOX
WRTMAI	WRITE THE MESSAGE INTO THE MAILBOX

3.10.3 External Routines List

The following is a list of all routines or functions not documented here that are called by modules that are documented here. The first caller, in alphabetical order, is listed as well. The specification in which any module is documented may be found in the Module Documentation Index (Document Number CM 620100001). See section 3.10.6 for a list of the modules that call each of these external routines.

IPC External Routines List

Module Name	First User
LIB$FREE_EF	SWEVTF
LIB$GET_EF	WRTERR
SYS$ASSIGN	SASGCH
SYS$BINTIM	WRTERR
SYS$CANTIM	CNLTMR
SYS$CLREF	SWEVTF
SYS$CREMBX	SCRTMB
SYS$DASSGN	WRTERR
SYS$DELMBX	SDELMB
SYS$GETDEV	VALMBE
SYS$GETJPI	GETPNM
SYS$QIO	RDMALF
SYS$QIOW	WRTERR
SYS$SETIMR	SETTMR
SYS$SETRWM	SCRTMB
SYS$WAITFR	WRTERR
SYS$WFLOR	SWEVTF

3.10.4 Include File List

The following is a list of all include files called in by modules being documented here. Each include file has a unique name regardless of the language being used. The purpose of each include file is listed as well. A more complete description of each include file is given in section 3.10.9. The purpose listed is the one that is in the source code of the include file.

A purpose of "**** PURPOSE NOT FOUND BY STRIPPER ****" indicates that a purpose statement was not written into the include file itself. The most common reason for this is that the include file comes from system libraries that were not developed by the project, such as 'C' libraries that are provided with the 'C' compiler.

See section 3.10.6 for a set of lists which show all the modules which call in each of these include files.

IPC Include File List

File Name	Purpose
($JPIDEF)	**** PURPOSE NOT FOUND BY STRIPPER ****
CHKSTS	CHKSTS.INC -- CHECK STATUS
ERRPRO	PROCESS ERROR INCLUDE FILE
ERRSTS	ERRSTS.INC -- IISS ERROR CODES
ERRSTS.INF	**** PURPOSE NOT FOUND BY STRIPPER ****
KIPC	KIPC.INC -- CONSTAND BLOCK FOR IPC PRIMITIVES
MBEB01	MBEB01.INC -- MAILBOX EVENT BLOCK DESCRIPTION
MBEB02	MBEB02.INC -- MAILBOX EVENT BLOCK DESCRIPTION
MBEB03	MBEB03.INC -- MAILBOX EVENT BLOCK DESCRIPTION
MBXEBK	MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
TIMREB	TIMREB.INC -- TIME EVENT BLOCK DESCRIPTION

3.10.5 Where Include File Used List

The following lists each include file from 3.10.4 and all the modules documented in this specification which include them. The purpose of each module is listed as well.

IPC Where-include-file-used List

Include File	Module Name	Module Purpose
($JPIDEF)		
	GETPNM	GET PROCESS NAME
CHKSTS		
	CNLTIM	CANCEL A TIMER
	CRTMBX	CREATE A MAILBOX
	DELMBX	DELETE A MAILBOX
	ERRFTL	PROCESS FATAL ERROR
	ERRPRO	PROCESS ERROR
	GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
	RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
	RELEVB	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
	SETTIM	START A TIMER
	SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM
	WAIT01	WAIT FOR AN EVENT TO OCCUR
	WAIT02	WAIT FOR AN EVENT TO OCCUR
	WAIT03	WAIT FOR AN EVENT TO OCCUR
ERRPRO		
	CNLTIM	CANCEL A TIMER
	CRTMBX	CREATE A MAILBOX
	DELMBX	DELETE A MAILBOX
	GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
	RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
	RELEVB	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
	SETTIM	START A TIMER
	SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM
	WAIT01	WAIT FOR AN EVENT TO OCCUR
	WAIT02	WAIT FOR AN EVENT TO OCCUR
	WAIT03	WAIT FOR AN EVENT TO OCCUR

IPC Where-include-file-used List

Include File	Module Name	Module Purpose
ERRSTS		
	CNLTIM	CANCEL A TIMER
	CRTMBX	CREATE A MAILBOX
	DELMBX	DELETE A MAILBOX
	GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
	RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
	RELEVB	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
	SETTIM	START A TIMER
	SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM
	WAIT01	WAIT FOR AN EVENT TO OCCUR
	WAIT02	WAIT FOR AN EVENT TO OCCUR
	WAIT03	WAIT FOR AN EVENT TO OCCUR
ERRSTS.INF		
	CNLTMR	CANCEL THE TIMER
	GETPNM	GET PROCESS NAME
	LOCKEF	LOCK EVENT FLAG
	RDMALF	READ THE MAILBOX FOR EVENT FLAG SET
	SASGCH	ASSIGN A CHANNEL TO A MAILBOX
	SCRTMB	CREATE A MAILBOX
	SDEACH	DEASSIGN CHANNEL FROM THE MAILBOX
	SDELMB	DELETE THE MAILBOX
	SETTMR	SET A TIMER
	VALMBE	VALIDATE THAT MAILBOX ALREADY EXISTS
	WRTERR	WRITE MESSAGE TO MAILBOX
	WRTMAI	WRITE THE MESSAGE INTO THE MAILBOX

IPC Where-include-file-used List

Include File	Module Name	Module Purpose
KIPC		
	CRTMBX	CREATE A MAILBOX
	GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
	RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
	SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM
MBEB01		
	WAIT01	WAIT FOR AN EVENT TO OCCUR
	WAIT02	WAIT FOR AN EVENT TO OCCUR
	WAIT03	WAIT FOR AN EVENT TO OCCUR
MBEB02		
	WAIT02	WAIT FOR AN EVENT TO OCCUR
	WAIT03	WAIT FOR AN EVENT TO OCCUR
MBEB03		
	WAIT03	WAIT FOR AN EVENT TO OCCUR
MBXEBK		
	CRTMBX	CREATE A MAILBOX
	DELMBX	DELETE A MAILBOX
	GETMSG	GET A MESSAGE FROM ANOTHER PROGRAM
	RCVMSG	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
	RELEVB	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
	SNDMSG	SEND A MESSAGE TO ANOTHER PROGRAM

IPC Where-include-file-used List

Include File	Module Name	Module Purpose
TIMREB		
	CNLTIM	CANCEL A TIMER
	SETTIM	START A TIMER

3.10.6 Where External Routine Used List

The following lists each external function or routine listed in 3.10.3 and all the documented modules which call it. The purpose of each module is listed as well.

IPC Where-external-routine-used List

System Module	Module Name	Module Purpose
LIB$FREE_EF		
	FREVTF	FREE THE EVENT FLAG
	SWEVTF	WAIT FOR ONE OF POSSIBLY MANY EVENTS
	WRTERR	WRITE MESSAGE TO MAILBOX
LIB$GET_EF		
	LOCKEF	LOCK EVENT FLAG
	RDMALF	READ THE MAILBOX FOR EVENT FLAG SET
	SETTMR	SET A TIMER
	WRTERR	WRITE MESSAGE TO MAILBOX
SYS$ASSIGN		
	SASGCH	ASSIGN A CHANNEL TO A MAILBOX
	WRTERR	WRITE MESSAGE TO MAILBOX
SYS$BINTIM		
	SETTMR	SET A TIMER
	WRTERR	WRITE MESSAGE TO MAILBOX
SYS$CANTIM		
	CNLTMR	CANCEL THE TIMER
SYS$CLREF		
	SWEVTF	WAIT FOR ONE OF POSSIBLY MANY EVENTS

IPC Where-external-routine-used List

System Module	Module Name	Module Purpose
SYS$CREMBX		
	SCRTMB	CREATE A MAILBOX
SYS$DASSGN		
	SDEACH	DEASSIGN CHANNEL FROM THE MAILBOX
	WRTERR	WRITE MESSAGE TO MAILBOX
SYS$DELMBX		
	SDELMB	DELETE THE MAILBOX
SYS$GETDEV		
	VALMBE	VALIDATE THAT MAILBOX ALREADY EXISTS
SYS$GETJPI		
	GETPNM	GET PROCESS NAME
SYS$QIO		
	RDMALF	READ THE MAILBOX FOR EVENT FLAG SET
SYS$QIOW		
	WRTERR	WRITE MESSAGE TO MAILBOX
	WRTMAI	WRITE THE MESSAGE INTO THE MAILBOX

IPC Where-external-routine-used List

System Module	Module Name	Module Purpose
SYS$SETIMR		
	SETTMR	SET A TIMER
	WRTERR	WRITE MESSAGE TO MAILBOX
SYS$SETRWM		
	SCRTMB	CREATE A MAILBOX
SYS$WAITFR		
	WRTERR	WRITE MESSAGE TO MAILBOX
SYS$WFLOR		
	SWEVTF	WAIT FOR ONE OF POSSIBLY MANY EVENTS

3.10.7 Main Program Parts List

The following lists each Main Program listed in 3.10.1 and all the modules which are called either by that module itself or by any of the documented modules which it calls. It is possible for a non-main module to be listed more that once if it is called by multiple modules. The called modules, in this case known as program parts, are marked as to whether they are documented here. If so, the phrase "well-defined module" appears by the module name, if not it is an "external "routine". The Purpose of the Main Program module is listed as well.

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
CNLTIM	Purpose-->	CANCEL A TIMER
	CNLTMR	Well-defined module
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	FREVTF	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$CANTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
CRTMBX	Purpose-->	CREATE A MAILBOX
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SCRTMB	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$CREMBX	External routine
	SYS$DASSGN	External routine
	SYS$GETDEV	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$SETRWM	External routine
	SYS$WAITFR	External routine
	VALMBE	Well-defined module
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
DELMBX	Purpose-->	DELETE A MAILBOX
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SDEACH	Well-defined module
	SDELMB	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$DELMBX	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
GETMSG	Purpose-->	GET A MESSAGE FROM ANOTHER PROGRAM
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	FREVTF	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
LOCKEF	Purpose-->LOCK EVENT FLAG	
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
RCVMSG	Purpose-->	RECEIVE A MESSAGE FROM ANOTHER PROGRAM
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	RDMALF	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIO	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
RELEVB	Purpose-->	RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SDEACH	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
SETTIM	Purpose-->	START A TIMER
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SETTMR	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
SNDMSG	Purpose-->	SEND A MESSAGE TO ANOTHER PROGRAM
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SASGCH	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	WRTERR	Well-defined module
	WRTMAI	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
WAIT01	Purpose-->	WAIT FOR AN EVENT TO OCCUR
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SWEVTF	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$CLREF	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	SYS$WFLOR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
WAIT02	Purpose-->	WAIT FOR AN EVENT TO OCCUR
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SWEVTF	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$CLREF	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	SYS$WFLOR	External routine
	WRTERR	Well-defined module

IPC Main Program Parts List

Main Pgm Name	Module Name	Module Type
WAIT03	Purpose-->	WAIT FOR AN EVENT TO OCCUR
	ERRFTL	Well-defined module
	ERRPRO	Well-defined module
	GETPNM	Well-defined module
	LIB$FREE_EF	External routine
	LIB$GET_EF	External routine
	SWEVTF	Well-defined module
	SYS$ASSIGN	External routine
	SYS$BINTIM	External routine
	SYS$CLREF	External routine
	SYS$DASSGN	External routine
	SYS$GETJPI	External routine
	SYS$QIOW	External routine
	SYS$SETIMR	External routine
	SYS$WAITFR	External routine
	SYS$WFLOR	External routine
	WRTERR	Well-defined module

3.10.8 Module Documentation

The following documentation describes information which is specific to each individual module being documented in this specification as listed in section 3.10.2. It provides a compact way of getting information that would be otherwise buried within each module's source code.

The specific items in this module documentation have the following meanings:

NAME:	Name of program Module.
PURPOSE:	Purpose of Module as detailed in the source code.
LANGUAGE:	Programming language source code is written in. The choices are: VAX-11 FORTRAN C (I/S-1 Workbench 'C') VAX-11 COBOL
MODULE TYPE:	Whether a Program, Subroutine, or Function.
SOURCE FILE:	Name of Source File from file specification.
SOURCE FILE TYPE:	Source File Extension from file specification.
HOST:	Whether this is a host-dependent routine (VAX or IBM) or blank if host-independent.
SUBSYSTEM:	IISS sub-system this file resides in.
SUBDIRECTORY:	Sub-directory of that subsystem in which this file resides.
DOCUMENTATION GROUP:	Name of documentation group of which this source file is a member.
DESCRIPTION:	A description of the module as otained from the source code.
ARGUMENTS:	The arguments with which this routine is called if it is a Subroutine or a Function.

INCLUDE FILES:	A list of all the files that are included into this module as well as their purposes.
ROUTINES CALLED:	Subroutines or Functions, either documented or external, called by this module, if any.
CALLED DIRECTLY BY:	The documented routines which call this module, if any.
USED IN MAIN PROGRAM(S):	The documented Main Programs which contain this module in their parts list according to the list in section 3.10.7.

The Module Documentation is arranged alphabetically according to Module Name.

IPC Module Documentation

```
NAME:                   CNLTIM
PURPOSE:                CANCEL A TIMER
LANGUAGE:               VAX-11 COBOL
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            CNLTIM
SOURCE FILE TYPE:       .COB
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   CANCEL A RUNNING TIMER

ARGUMENTS:
----------
  TIMER-EVENT-BLOCK = RECRD
  RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:
--------------
  CHKSTS      - CHKSTS.INC -- CHECK STATUS
  ERRSTS      - ERRSTS.INC -- IISS ERROR CODES
  TIMREB      - TIMREB.INC -- TIME EVENT BLOCK DESCRIPTION
  ERRPRO      - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:
----------------
  FREVTF      - FREE THE EVENT FLAG
  CNLTMR      - CANCEL THE TIMER
  ERRPRO      - PROCESS ERROR
```

IPC Module Documentation

```
NAME:                   CNLTMR
PURPOSE:                CANCEL THE TIMER
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            CNLTMR
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
   CANCEL IISS TIMER
  REQUEST IDENTIFICATION IS 4


ARGUMENTS:
----------
  RSTATS =  CHAR
          - RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$CANTIM


CALLED DIRECTLY BY:
-------------------
  CNLTIM      - CANCEL A TIMER


USED IN MAIN PROGRAM(S):
------------------------
  CNLTIM      - CANCEL A TIMER
```

IPC Module Documentation

NAME: CRTMBX
PURPOSE: CREATE A MAILBOX
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTMBX
SOURCE FILE TYPE: .COB
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

IT CREATES A MAILBOX THROUGH WHICH THE PROGRAM WILL RECEIVE MESSAGES FROM ANOTHER PROGRAM RUNNING ON THE SAME COMPUTER.

ARGUMENTS:

INPUT-MAILBOX-NAME = DSPLY [X(14)]
MAILBOX-SIZE = DSPLY [9(5)]
MAILBOX-EVENT-BLOCK = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

CHKSTS	- CHKSTS.INC -- CHECK STATUS
ERRSTS	- ERRSTS.INC -- IISS ERROR CODES
KIPC	- KIPC.INC -- CONSTAND BLOCK FOR IPC PRIMITIVES
MBXEBK	- MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
ERRPRO	- PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

VALMBE	- VALIDATE THAT MAILBOX ALREADY EXISTS
SCRTMB	- CREATE A MAILBOX
ERRPRO	- PROCESS ERROR

IPC Module Documentation

NAME: DELMBX
PURPOSE: DELETE A MAILBOX
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: DELMBX
SOURCE FILE TYPE: .COB
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

- IT DELETES A MAILBOX WHEREBY REMOVING THE ABILITY TO RECEIVE MESSAGES FROM ANOTHER PROGRAM THROUGH THE GIVEN INPUT MAILBOX

ARGUMENTS:

INPUT-MAILBOX-NAME = DSPLY [X(14)]
MAILBOX-EVENT-BLOCK = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

CHKSTS	- CHKSTS.INC -- CHECK STATUS
ERRSTS	- ERRSTS.INC -- IISS ERROR CODES
MBXEBK	- MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
ERRPRO	- PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

SDELMB	- DELETE THE MAILBOX
SDEACH	- DEASSIGN CHANNEL FROM THE MAILBOX
ERRPRO	- PROCESS ERROR

IPC Module Documentation

NAME:	ENDRUN
PURPOSE:	STOP THE PROGRAM
LANGUAGE:	VAX-11 COBOL
MODULE TYPE:	PROGRAM
SOURCE FILE:	ENDRUN
SOURCE FILE TYPE:	.COB
HOST:	VAX
SUBSYSTEM:	IPC
SUBDIRECTORY:	
DOCUMENTATION GROUP:	IPC

DESCRIPTION:

- THE IBM NEEDS A SPECIAL ROUTINE TO STOP THE PROGRAM, THEREFORE WE ALL DO.

IPC Module Documentation

```
NAME:                    ERRFTL
PURPOSE:                 PROCESS FATAL ERROR
LANGUAGE:                VAX-11 COBOL
MODULE TYPE:             SUBROUTINE
SOURCE FILE:             ERRFTL
SOURCE FILE TYPE:        .COB
HOST:
SUBSYSTEM:               ERR
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
  - This module date and time stamps the
  error message, assigns a function code
  and writes the error message to a
  file called ERRFTL

  -


ARGUMENTS:
----------
  RET-STATUS = DSPLY [X(5)]
  MODULE-NAME = DSPLY [X(6)]
  MESG-DESC = DSPLY [X(60)]
  ORIGINAL-ERR-MSG = DSPLY [X(109)]


INCLUDE FILES:
--------------
  CHKSTS      - CHKSTS.INC -- CHECK STATUS


ROUTINES CALLED:
----------------
  GETPNM      -  GET PROCESS NAME                                **

CALLED DIRECTLY BY:
-------------------
  ERRPRO      - PROCESS ERROR


USED IN MAIN PROGRAM(S):
------------------------
  CNLTIM      - CANCEL A TIMER
  CRTMBX      - CREATE A MAILBOX
  DELMBX      - DELETE A MAILBOX
  GETMSG      - GET A MESSAGE FROM ANOTHER PROGRAM
  LOCKEF      - LOCK EVENT FLAG
  RCVMSG      - RECEIVE A MESSAGE FROM ANOTHER PROGRAM
  RELEVB      - RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
  SETTIM      - START A TIMER
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM
```

WAIT01	- WAIT FOR AN EVENT TO OCCUR
WAIT02	- WAIT FOR AN EVENT TO OCCUR
WAIT03	- WAIT FOR AN EVENT TO OCCUR

IPC Module Documentation

```
NAME:                    ERRPRO
PURPOSE:                 PROCESS ERROR
LANGUAGE:                VAX-11 COBOL
MODULE TYPE:             SUBROUTINE
SOURCE FILE:             ERRPRO
SOURCE FILE TYPE:        .COB
HOST:
SUBSYSTEM:               ERR
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
  LANGUAGE:  VAX-11 COBOL

  DESCRIPTION:
  ------------


ARGUMENTS:
----------
  RET-STATUS = DSPLY [X(5)]
  MODULE-NAME = DSPLY [X(6)]
  MESG-DESC = DSPLY [X(60)]


INCLUDE FILES:
--------------
  CHKSTS      - CHKSTS.INC -- CHECK STATUS


ROUTINES CALLED:
----------------
  GETPNM      -  GET PROCESS NAME                                **
  WRTERR      -  WRITE MESSAGE TO MAILBOX                        **
  ERRFTL      - PROCESS FATAL ERROR


CALLED DIRECTLY BY:
-------------------
  CNLTIM      - CANCEL A TIMER
  CRTMBX      - CREATE A MAILBOX
  DELMBX      - DELETE A MAILBOX
  GETMSG      - GET A MESSAGE FROM ANOTHER PROGRAM
  RCVMSG      - RECEIVE A MESSAGE FROM ANOTHER PROGRAM
  RELEVB      - RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
  SETTIM      - START A TIMER
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM
  WAIT01      - WAIT FOR AN EVENT TO OCCUR
  WAIT02      - WAIT FOR AN EVENT TO OCCUR
  WAIT03      - WAIT FOR AN EVENT TO OCCUR
  CNLTMR      - CANCEL THE TIMER
  FREVTF      - FREE THE EVENT FLAG
  LOCKEF      - LOCK EVENT FLAG
  RDMALF      - READ THE MAILBOX FOR EVENT FLAG SET
```

SASGCH	- ASSIGN A CHANNEL TO A MAILBOX
SCRTMB	- CREATE A MAILBOX
SDEACH	- DEASSIGN CHANNEL FROM THE MAILBOX
SDELMB	- DELETE THE MAILBOX
SETTMR	- SET A TIMER
SWEVTF	- WAIT FOR ONE OF POSSIBLY MANY EVENTS
VALMBE	- VALIDATE THAT MAILBOX ALREADY EXISTS
WRTMAI	- WRITE THE MESSAGE INTO THE MAILBOX

USED IN MAIN PROGRAM(S):

CNLTIM	- CANCEL A TIMER
CRTMBX	- CREATE A MAILBOX
DELMBX	- DELETE A MAILBOX
GETMSG	- GET A MESSAGE FROM ANOTHER PROGRAM
LOCKEF	- LOCK EVENT FLAG
RCVMSG	- RECEIVE A MESSAGE FROM ANOTHER PROGRAM
RELEVB	- RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
SETTIM	- START A TIMER
SNDMSG	- SEND A MESSAGE TO ANOTHER PROGRAM
WAIT01	- WAIT FOR AN EVENT TO OCCUR
WAIT02	- WAIT FOR AN EVENT TO OCCUR
WAIT03	- WAIT FOR AN EVENT TO OCCUR

IPC Module Documentation

```
NAME:                   FREVTF
PURPOSE:                FREE THE EVENT FLAG
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            FREVTF
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :- THIS MODULE RELEASES AN EVENT FLAG THAT
  WAS PREVIOUSLY OBTAINED FROM THE SYSTEM.
   :-

ARGUMENTS:
----------
  EVTFLG =  I*2
  RSTATS =  CHAR


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  LIB$FREE_EF


CALLED DIRECTLY BY:
-------------------
  CNLTIM      - CANCEL A TIMER
  GETMSG      - GET A MESSAGE FROM ANOTHER PROGRAM


USED IN MAIN PROGRAM(S):
------------------------
  CNLTIM      - CANCEL A TIMER
  GETMSG      - GET A MESSAGE FROM ANOTHER PROGRAM
```

IPC Module Documentation

```
NAME:                   GETMSG
PURPOSE:                GET A MESSAGE FROM ANOTHER PROGRAM
LANGUAGE:               VAX-11 COBOL
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            GETMSG
SOURCE FILE TYPE:       .COB
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
  - IT ACCEPTS THE MESSAGE THAT WAS SENT FROM
  ANOTHER PORGRAM RUNNING ON THE SAME COMPUTER
  AND MOVES IT INTO THE GIVEN BUFFER.



ARGUMENTS:
----------
  INPUT-MAILBOX-NAME = DSPLY [X(14)]
  BUFFER = DSPLY [X(2000)]
  BUFFER-SIZE = DSPLY [9(4)]
  NUMBER-OF-BYTES = DSPLY [9(4)]
  MAILBOX-EVENT-BLOCK = RECRD
  RET-STATUS = DSPLY [X(5)]


INCLUDE FILES:
--------------
  CHKSTS      - CHKSTS.INC -- CHECK STATUS
  KIPC        - KIPC.INC -- CONSTAND BLOCK FOR IPC PRIMITIVES
  ERRSTS      - ERRSTS.INC -- IISS ERROR CODES
  MBXEBK      - MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
  ERRPRO      - PROCESS ERROR INCLUDE FILE


ROUTINES CALLED:
----------------
  FREVTF      - FREE THE EVENT FLAG
  ERRPRO      - PROCESS ERROR
```

IPC Module Documentation

```
NAME:                   GETPNM
PURPOSE:                 GET PROCESS NAME
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            GETPNM
SOURCE FILE TYPE:       .FOR
HOST:
SUBSYSTEM:              ERR
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   GET THE NAME OF THE CALLING PROCESS


ARGUMENTS:
----------
  PRCNAM =  CHAR
          - Process name
  RSTATS =  CHAR
          - Return status


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****
  ($JPIDEF)  - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  SYS$GETJPI


CALLED DIRECTLY BY:
-------------------
  ERRFTL      - PROCESS FATAL ERROR
  ERRPRO      - PROCESS ERROR


USED IN MAIN PROGRAM(S):
------------------------
  CNLTIM      - CANCEL A TIMER
  CRTMBX      - CREATE A MAILBOX
  DELMBX      - DELETE A MAILBOX
  GETMSG      - GET A MESSAGE FROM ANOTHER PROGRAM
  LOCKEF      - LOCK EVENT FLAG
  RCVMSG      - RECEIVE A MESSAGE FROM ANOTHER PROGRAM
  RELEVB      - RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
  SETTIM      - START A TIMER
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM
  WAIT01      - WAIT FOR AN EVENT TO OCCUR
  WAIT02      - WAIT FOR AN EVENT TO OCCUR
  WAIT03      - WAIT FOR AN EVENT TO OCCUR
```

IPC Module Documentation

NAME: LOCKEF
PURPOSE: LOCK EVENT FLAG
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: LOCKEF
SOURCE FILE TYPE: .FOR
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

:- LOCK EVENT FLAG FROM BEING USED UNTIL FREED.

INCLUDE FILES:

ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****

ROUTINES CALLED:

ERRPRO - PROCESS ERROR
LIB$GET_EF

IPC Module Documentation

```
NAME:                   RCVMSG
PURPOSE:                RECEIVE A MESSAGE FROM ANOTHER PROGRAM
LANGUAGE:               VAX-11 COBOL
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            RCVMSG
SOURCE FILE TYPE:       .COB
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------



ARGUMENTS:
----------
  INPUT-MAILBOX-NAME = DSPLY [X(14)]
  EVENT-NUMBER = DSPLY [99]
  MAILBOX-EVENT-BLOCK = RECRD
  RET-STATUS = DSPLY [X(5)]


INCLUDE FILES:
--------------
  CHKSTS      - CHKSTS.INC -- CHECK STATUS
  ERRSTS      - ERRSTS.INC -- IISS ERROR CODES
  KIPC        - KIPC.INC -- CONSTAND BLOCK FOR IPC PRIMITIVES
  MBXEBK      - MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
  ERRPRO      - PROCESS ERROR INCLUDE FILE


ROUTINES CALLED:
----------------
  RDMALF      - READ THE MAILBOX FOR EVENT FLAG SET
  ERRPRO      - PROCESS ERROR
```

IPC Module Documentation

```
NAME:                   RDMALF
PURPOSE:                READ THE MAILBOX FOR EVENT FLAG SET
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            RDMALF
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :- ISSUE QIO WITH EVENT FLAG TO READ MESSAGE
  FROM MAILBOX USING THE CHANNEL NUMBER


ARGUMENTS:
----------
  CHANNL =  I*2
           -CHANNEL NUMBER
  EVTFLG =  I*2
           -EVENT FLAG
  EVTBLK =  L*1  (1)
           -MAILBOX EVENT BLOCK
  BUFLEN =  I*2
           -MAXIMUM BUFFER LENGTH
  RSTATS =  CHAR
           -RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  LIB$GET_EF
  SYS$QIO


CALLED DIRECTLY BY:
-------------------
  RCVMSG      - RECEIVE A MESSAGE FROM ANOTHER PROGRAM


USED IN MAIN PROGRAM(S):
------------------------
  RCVMSG      - RECEIVE A MESSAGE FROM ANOTHER PROGRAM
```

IPC Module Documentation

```
NAME:                   RELEVB
PURPOSE:                RELEASE A TARGET EVENT BLOCK (CLEAR IT)
                        AND
LANGUAGE:               VAX-11 COBOL
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            RELEVB
SOURCE FILE TYPE:       .COB
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
  - DEASSIGN THE CHANNEL ASSIGNED TO THE
  TARGET MAILBOX.



ARGUMENTS:
----------
  TARGET-MAILBOX-NAME = DSPLY [X(14)]
  MAILBOX-EVENT-BLOCK = RECRD
  RET-STATUS = DSPLY [X(5)]


INCLUDE FILES:
--------------
  ERRSTS      - ERRSTS.INC -- IISS ERROR CODES
  CHKSTS      - CHKSTS.INC -- CHECK STATUS
  MBXEBK      - MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
  ERRPRO      - PROCESS ERROR INCLUDE FILE


ROUTINES CALLED:
----------------
  SDEACH      - DEASSIGN CHANNEL FROM THE MAILBOX
  ERRPRO      - PROCESS ERROR
```

IPC Module Documentation

```
NAME:                   SASGCH
PURPOSE:                ASSIGN A CHANNEL TO  A MAILBOX
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            SASGCH
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :-ASSIGN A CHANNEL NUMBER TO MAILBOX


ARGUMENTS:
----------
  MBXNAM =  CHAR
           -MAILBOX NAME
  CHANNL =  I*2
           -CHANNEL NUMBER
  RSTATS =  CHAR
           -RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$ASSIGN


CALLED DIRECTLY BY:
-------------------
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM


USED IN MAIN PROGRAM(S):
------------------------
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM
```

IPC Module Documentation

```
NAME:                   SCRTMB
PURPOSE:                CREATE A MAILBOX
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            SCRTMB
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :- TO CREATE A MAILBOX USING THE NAME AND THE
  SIZE SPECIFIED. IT ALSO DISABLES THE RESOURCE
  WAIT MODE TO ALLOW CONTROL RETURN TO CALLING PROGRAM
  IMMEDIATELY WITHOUT WAITING FOR THE RESOURCE
  TO BE AVAILABLE, SUCH AS THE MAILBOX FULL.

ARGUMENTS:
----------
  MBXNAM =  CHAR
           -MAILBOX NAME
  MBXSIZ =  I*2
           -MAILBOX SIZE
  CHANNL =  I*2
           -CHANNEL NUMBER
  RSTATS =  CHAR
           -RETURN STATUS

INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****

ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$CREMBX
  SYS$SETRWM

CALLED DIRECTLY BY:
-------------------
  CRTMBX      - CREATE A MAILBOX

USED IN MAIN PROGRAM(S):
------------------------
  CRTMBX      - CREATE A MAILBOX
```

IPC Module Documentation

```
NAME:                   SDEACH
PURPOSE:                DEASSIGN CHANNEL FROM THE MAILBOX
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            SDEACH
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
   :-DEASSIGN A MAILBOX CHANNEL NUMBER


ARGUMENTS:
----------
  CHANNL =  I*2
           -CHANNEL NUMBER
  RSTATS =  CHAR
           -RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****

ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$DASSGN

CALLED DIRECTLY BY:
-------------------
  DELMBX      - DELETE A MAILBOX
  RELEVB      - RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND

USED IN MAIN PROGRAM(S):
------------------------
  DELMBX      - DELETE A MAILBOX
  RELEVB      - RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
```

IPC Module Documentation

```
NAME:                   SDELMB
PURPOSE:                DELETE THE MAILBOX
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            SDELMB
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :- TO DELETE A MAILBOX USING THE CHANNEL NUMBER


ARGUMENTS:
----------
  CHANNL =  I*2
           -CHANNEL NUMBER
  RSTATS =  CHAR
           -RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$DELMBX


CALLED DIRECTLY BY:
-------------------
  DELMBX      - DELETE A MAILBOX


USED IN MAIN PROGRAM(S):
------------------------
  DELMBX      - DELETE A MAILBOX
```

IPC Module Documentation

NAME: SETTIM
PURPOSE: START A TIMER
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: SETTIM
SOURCE FILE TYPE: .COB
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

REQUEST A TIMER TO START RUNNING. THE PROGRAM CONTINUES TO EXECUTE WITH THE ELAPSED TIME BEING DISCOVERED IN THE WAITEB PRIMITIVE.

ARGUMENTS:

TIME-INTERVAL = RECRD
EVENT-NUMBER = DSPLY [99]
TIMER-EVENT-BLOCK = RECRD
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

CHKSTS - CHKSTS.INC -- CHECK STATUS
ERRSTS - ERRSTS.INC -- IISS ERROR CODES
TIMREB - TIMREB.INC -- TIME EVENT BLOCK DESCRIPTION
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

SETTMR - SET A TIMER
ERRPRO - PROCESS ERROR

IPC Module Documentation

```
NAME:                   SETTMR
PURPOSE:                SET A TIMER
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            SETTMR
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
   SET A TIMER WITH AN EVENT FLAG
  REQUEST IDENTIFICATION IS 4


ARGUMENTS:
----------
  INTVAL =  CHAR
          - TIME INTERVAL - HHMMSS
  EVTFLG =  I*2
          - EVENT FLAG NUMBER
  RSTATS =  CHAR
          - RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  LIB$GET_EF
  SYS$BINTIM
  SYS$SETIMR


CALLED DIRECTLY BY:
-------------------
  SETTIM      - START A TIMER

USED IN MAIN PROGRAM(S):
------------------------
  SETTIM      - START A TIMER
```

IPC Module Documentation

NAME: SNDMSG
PURPOSE: SEND A MESSAGE TO ANOTHER PROGRAM
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: SNDMSG
SOURCE FILE TYPE: .COB
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

- IT SENDS A MESSAGE TO ANOTHER PROGRAM RUNNING ON THE SAME COMPUTER THROUGH THE INPUT MAILBOX OF THE OTHER PROGRAM.

ARGUMENTS:

TARGET-MAILBOX-NAME = DSPLY [X(14)]
BUFFER = DSPLY [X(2000)]
NUMBER-OF-BYTES = DSPLY [9(4)]
MAILBOX-EVENT-BLOCK = *RECRD*
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

CHKSTS	- CHKSTS.INC -- CHECK STATUS
ERRSTS	- ERRSTS.INC -- IISS ERROR CODES
KIPC	- KIPC.INC -- CONSTAND BLOCK FOR IPC PRIMITIVES
MBXEBK	- MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
ERRPRO	- PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

WRTMAI	- WRITE THE MESSAGE INTO THE MAILBOX
SASGCH	- ASSIGN A CHANNEL TO A MAILBOX
ERRPRO	- PROCESS ERROR

IPC Module Documentation

NAME: SWEVTF
PURPOSE: WAIT FOR ONE OF POSSI[illegible] MANY EVENTS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SWEVTF
SOURCE FILE TYPE: .FOR
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

:- THIS MODULE SET UP THE EVENT CLUSTER AND WAITS FOR ONE OF THE EVENT TO HAPPEN. :-

ARGUMENTS:

ENARRY =	I*2	(22)
EVTFLG =	I*2	(22)
EVTNUM =	I*2	
RSTATS =	CHAR	

ROUTINES CALLED:

- ERRPRO - PROCESS ERROR
- LIB$FREE_EF
- SYS$CLREF
- SYS$WFLOR

CALLED DIRECTLY BY:

- WAIT01 - WAIT FOR AN EVENT TO OCCUR
- WAIT02 - WAIT FOR AN EVENT TO OCCUR
- WAIT03 - WAIT FOR AN EVENT TO OCCUR

USED IN MAIN PROGRAM(S):

- WAIT01 - WAIT FOR AN EVENT TO OCCUR
- WAIT02 - WAIT FOR AN EVENT TO OCCUR
- WAIT03 - WAIT FOR AN EVENT TO OCCUR

IPC Module Documentation

```
NAME:                   VALMBE
PURPOSE:                VALIDATE THAT MAILBOX ALREADY EXISTS
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            VALMBE
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :- THIS MODULE CHECKS TO SEE IF MAILBOX
  ALREADY EXISTS.


ARGUMENTS:
----------
  INMBNM =  CHAR
           -INPUT MAILBOX NAME
  RSTATS =  CHAR
           -RET STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$GETDEV


CALLED DIRECTLY BY:
-------------------
  CRTMBX      - CREATE A MAILBOX


USED IN MAIN PROGRAM(S):
------------------------
  CRTMBX      - CREATE A MAILBOX
```

IPC Module Documentation

```
NAME:                   WAIT01
PURPOSE:                WAIT FOR AN EVENT TO OCCUR
LANGUAGE:               VAX-11 COBOL
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            WAIT01
SOURCE FILE TYPE:       .COB
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
  - IT WAITS FOR ONE OF OUTSTANDING REQUESTS THAT
  ARE ASSOCIATED WITH THE LIST OF EVENT BLOCKS
  TO BE SATISFIED.  THE EVENT NUMBER ASSOCIATED
  WITH THE COMPLETED REQUEST IS RETURNED IN THE
  EVENT NUMBER VARIABLE.



ARGUMENTS:
----------
  EVENT-NUMBER = DSPLY [99]
  RET-STATUS = DSPLY [X(5)]
  NUMBER-OF-EVENT-BLOCKS = DSPLY [99]
  MBX-EVENT-BLOCK-01 = RECRD


INCLUDE FILES:
--------------
  CHKSTS      - CHKSTS.INC -- CHECK STATUS
  ERRSTS      - ERRSTS.INC -- IISS ERROR CODES
  MBEB01      - MBEB01.INC -- MAILBOX EVENT BLOCK DESCRIPTION
  ERRPRO      - PROCESS ERROR INCLUDE FILE


ROUTINES CALLED:
----------------
  SWEVTF      - WAIT FOR ONE OF POSSIBLY MANY EVENTS
  ERRPRO      - PROCESS ERROR
```

IPC Module Documentation

NAME: WAIT02
PURPOSE: WAIT FOR AN EVENT TO OCCUR
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: WAIT02
SOURCE FILE TYPE: .COB
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

- IT WAITS FOR ONE OF OUTSTANDING REQUESTS THAT ARE ASSOCIATED WITH THE LIST OF EVENT BLOCKS TO BE SATISFIED. THE EVENT NUMBER ASSOCIATED WITH THE COMPLETED REQUEST IS RETURNED IN THE EVENT NUMBER VARIABLE.

ARGUMENTS:

EVENT-NUMBER = DSPLY [99]
RET-STATUS = DSPLY [X(5)]
NUMBER-OF-EVENT-BLOCKS = DSPLY [99]
MBX-EVENT-BLOCK-01 = RECRD
MBX-EVENT-BLOCK-02 = RECRD

INCLUDE FILES:

CHKSTS	- CHKSTS.INC -- CHECK STATUS
ERRSTS	- ERRSTS.INC -- IISS ERROR CODES
MBEB01	- MBEB01.INC -- MAILBOX EVENT BLOCK DESCRIPTION
MBEB02	- MBEB02.INC -- MAILBOX EVENT BLOCK DESCRIPTION
ERRPRO	- PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

SWEVTF	- WAIT FOR ONE OF POSSIBLY MANY EVENTS
ERRPRO	- PROCESS ERROR

IPC Module Documentation

NAME: WAIT03
PURPOSE: WAIT FOR AN EVENT TO OCCUR
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: WAIT03
SOURCE FILE TYPE: .COB
HOST: VAX
SUBSYSTEM: IPC
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:

- IT WAITS FOR ONE OF OUTSTANDING REQUESTS THAT ARE ASSOCIATED WITH THE LIST OF EVENT BLOCKS TO BE SATISFIED. THE EVENT NUMBER ASSOCIATED WITH THE COMPLETED REQUEST IS RETURNED IN THE EVENT NUMBER VARIABLE.

ARGUMENTS:

EVENT-NUMBER = DSPLY [99]
RET-STATUS = DSPLY [X(5)]
NUMBER-OF-EVENT-BLOCKS = DSPLY [99]
MBX-EVENT-BLOCK-01 = RECRD
MBX-EVENT-BLOCK-02 = RECRD
MBX-EVENT-BLOCK-03 = RECRD

INCLUDE FILES:

CHKSTS	- CHKSTS.INC -- CHECK STATUS
ERRSTS	- ERRSTS.INC -- IISS ERROR CODES
MBEB01	- MBEB01.INC -- MAILBOX EVENT BLOCK DESCRIPTION
MBEB02	- MBEB02.INC -- MAILBOX EVENT BLOCK DESCRIPTION
MBEB03	- MBEB03.INC -- MAILBOX EVENT BLOCK DESCRIPTION
ERRPRO	- PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

SWEVTF	- WAIT FOR ONE OF POSSIBLY MANY EVENTS
ERRPRO	- PROCESS ERROR

IPC Module Documentation

```
NAME:                   WRTERR
PURPOSE:                 WRITE MESSAGE TO MAILBOX
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            WRTERR
SOURCE FILE TYPE:       .FOR
HOST:
SUBSYSTEM:              ERR
SUBDIRECTORY:
DOCUMENTATION GROUP: IPC

DESCRIPTION:
------------
   :- ISSUE QIO TO WRITE A MESSAGE TO MAILBOX


ARGUMENTS:
----------
  MBXNAM =  CHAR
           -MAILBOX NAME
  BUFLEN =  I*2
           -MAXIMUM BUFFER LENGTH
  INBUF =  L*1  (1)
           -MESSAGE
  RSTATS =  CHAR
           -RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  LIB$FREE_EF
  LIB$GET_EF
  SYS$ASSIGN
  SYS$BINTIM
  SYS$DASSGN
  SYS$QIOW
  SYS$SETIMR
  SYS$WAITFR

CALLED DIRECTLY BY:
-------------------
  ERRPRO     - PROCESS ERROR
```

USED IN MAIN PROGRAM(S):

CNLTIM	- CANCEL A TIMER
CRTMBX	- CREATE A MAILBOX
DELMBX	- DELETE A MAILBOX
GETMSG	- GET A MESSAGE FROM ANOTHER PROGRAM
LOCKEF	- LOCK EVENT FLAG
RCVMSG	- RECEIVE A MESSAGE FROM ANOTHER PROGRAM
RELEVB	- RELEASE A TARGET EVENT BLOCK (CLEAR IT) AND
SETTIM	- START A TIMER
SNDMSG	- SEND A MESSAGE TO ANOTHER PROGRAM
WAIT01	- WAIT FOR AN EVENT TO OCCUR
WAIT02	- WAIT FOR AN EVENT TO OCCUR
WAIT03	- WAIT FOR AN EVENT TO OCCUR

IPC Module Documentation

```
NAME:                   WRTMAI
PURPOSE:                WRITE THE MESSAGE INTO THE MAILBOX
LANGUAGE:               VAX-11 FORTRAN
MODULE TYPE:            SUBROUTINE
SOURCE FILE:            WRTMAI
SOURCE FILE TYPE:       .FOR
HOST:                   VAX
SUBSYSTEM:              IPC
SUBDIRECTORY:
DOCUMENTATION GROUP:    IPC

DESCRIPTION:
------------
   :- ISSUE QIO TO WRITE A MESSAGE TO MAILBOX


ARGUMENTS:
----------
  CHANNL =  I*2
           -CHANNEL NUMBER
  BUFLEN =  I*2
           -MAXIMUM BUFFER LENGTH
  INBUF =  L*1  (1)
           -MESSAGE
  RSTATS =  CHAR
           -RETURN STATUS


INCLUDE FILES:
--------------
  ERRSTS.INF - **** PURPOSE NOT FOUND BY STRIPPER ****


ROUTINES CALLED:
----------------
  ERRPRO      - PROCESS ERROR
  SYS$QIOW


CALLED DIRECTLY BY:
-------------------
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM

USED IN MAIN PROGRAM(S):
------------------------
  SNDMSG      - SEND A MESSAGE TO ANOTHER PROGRAM
```

3.10.9 Include File Descriptions

The following list contains a purpose and description of each include file listed in 3.10.4 as specified in the source code. The language it is written in is also given.

IPC Include File Description

```
FILE NAME: CHKSTS
PURPOSE:   CHKSTS.INC -- CHECK STATUS
LANGUAGE:  VAX-11 COBOL

DESCRIPTION:
------------
```

IPC Include File Description

```
FILE NAME: ERRPRO
PURPOSE:   PROCESS ERROR INCLUDE FILE
LANGUAGE:  VAX-11 COBOL

DESCRIPTION:
------------
```

IPC Include File Description

```
FILE NAME: ERRSTS
PURPOSE:   ERRSTS.INC -- IISS ERROR CODES
LANGUAGE:  VAX-11 COBOL

DESCRIPTION:
------------
     THIS FILE CONTAINS ALL IISS ERROR CODES DEFINED IN     *
   COBOL FORMAT                                             *
```

IPC Include File Description

FILE NAME: KIPC
PURPOSE: KIPC.INC -- CONSTAND BLOCK FOR IPC PRIMITIVES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THIS FILE CONTAINS ALL CONSTANT DATA ITEMS *
USED IN THE IPC PRIMITIVES. *

IPC Include File Description

FILE NAME: MBEB01
PURPOSE: MBEB01.INC -- MAILBOX EVENT BLOCK DESCRIPTION
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

IPC Include File Description

FILE NAME: MBEB02
PURPOSE: MBEB02.INC -- MAILBOX EVENT BLOCK DESCRIPTION
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

IPC Include File Description

FILE NAME: MBEB03
PURPOSE: MBEB03.INC -- MAILBOX EVENT BLOCK DESCRIPTION
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

IPC Include File Description

FILE NAME: MBXEBK
PURPOSE: MBXEBK.INC -- MAILBOX EVENT BLOCK DESCRIPTION
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

IPC Include File Description

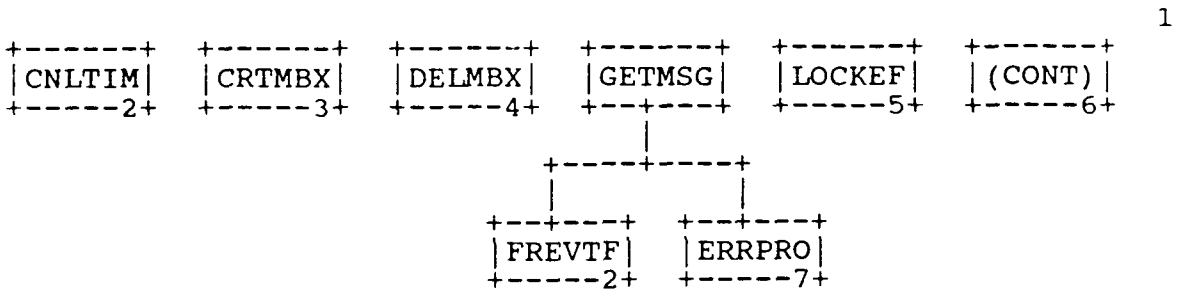
FILE NAME: TIMREB
PURPOSE: TIMREB.INC -- TIME EVENT BLOCK DESCRIPTION
LANGUAGE: VAX-11 COBOL

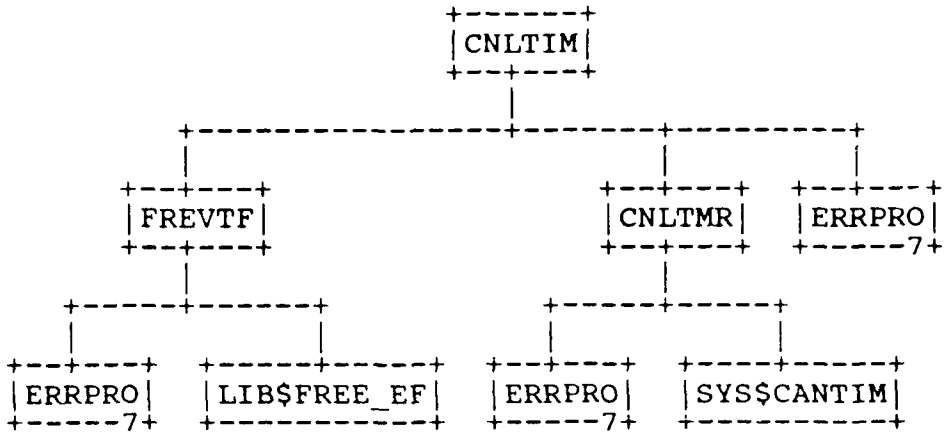
DESCRIPTION:

3.10.10 Hierarchy Chart

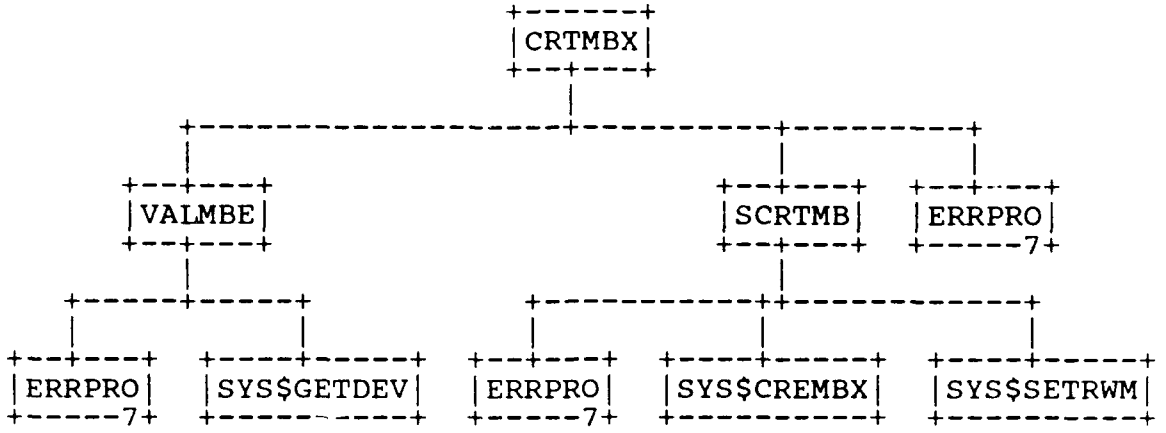
The following hierarchy charts show the relationships between all of the modules mentioned in the above documentation. A module may call a subroutine several times within its code, but the call will only be shown once as a single relationship on this hierarchy chart. All modules shown at the top of the first page are considered Main Programs as described in section 3.10.1 above.

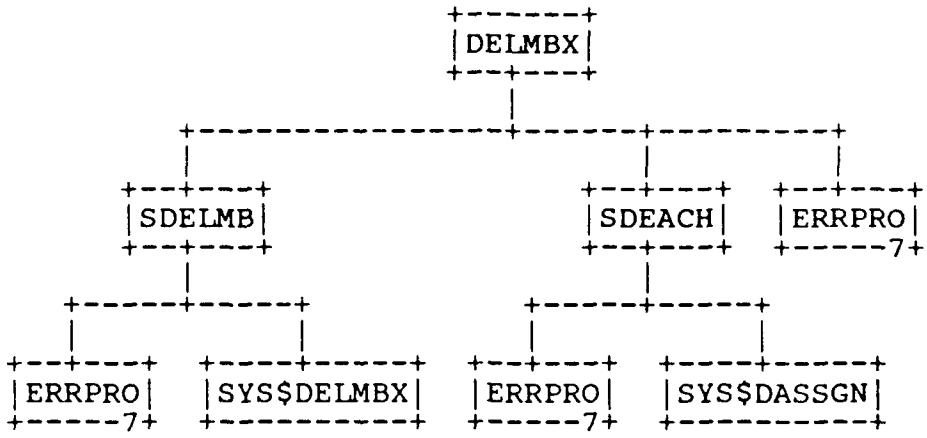
There is an internal paging scheme as marked by the numbers in the upper right corner of each page. An index after the last page of the chart shows where a routine and its calls are first defined. If a routine has no page reference, it either makes no calls or is an external routine. A continuation box on the end of a tree limb shows where that the tree continues on the page numbered mentioned. A number in a box with a routine name points to the page where the routine is further defined within the hierarchy tree. If there is no number in a box, the routine either makes no calls or is an external routine.



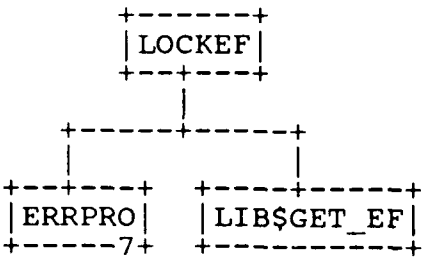

CNLTIM
FREVTF
CNLTMR
ERRPRO
ERRPRO
LIB$FREE_EF
ERRPRO
SYS$CANTIM

3

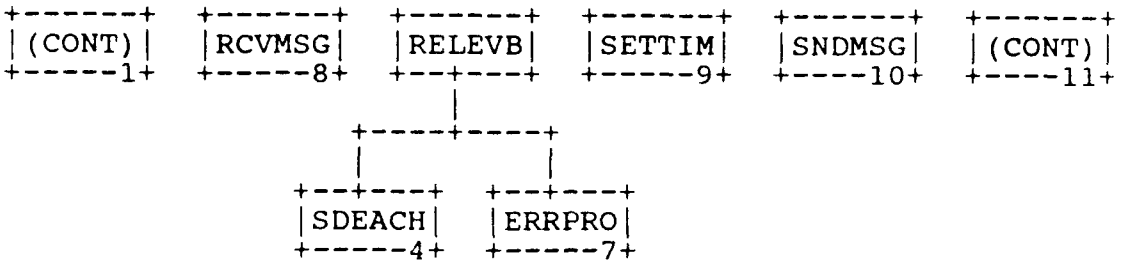

CRTMBX
VALMBE
SCRTMB
ERRPRO
ERRPRO
SYS$GETDEV
ERRPRO
SYS$CREMBX
SYS$SETRWM


DELMBX
SDELMB
SDEACH
ERRPRO
ERRPRO
SYS$DELMBX
ERRPRO
SYS$DASSGN

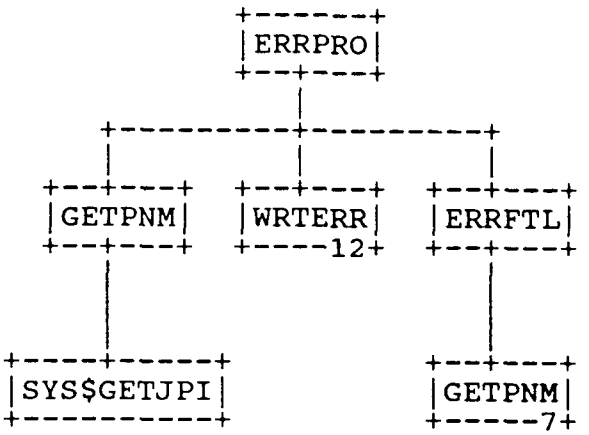
5

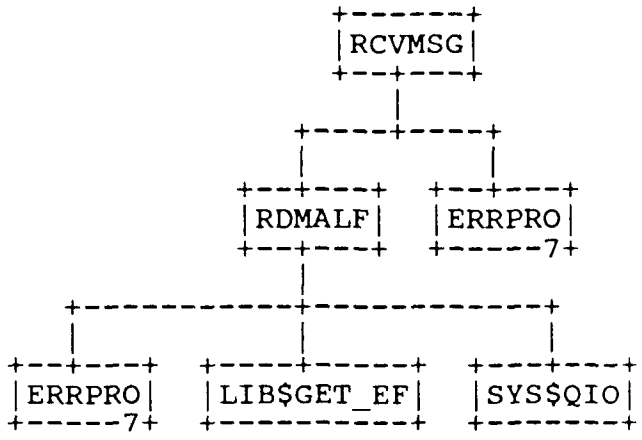


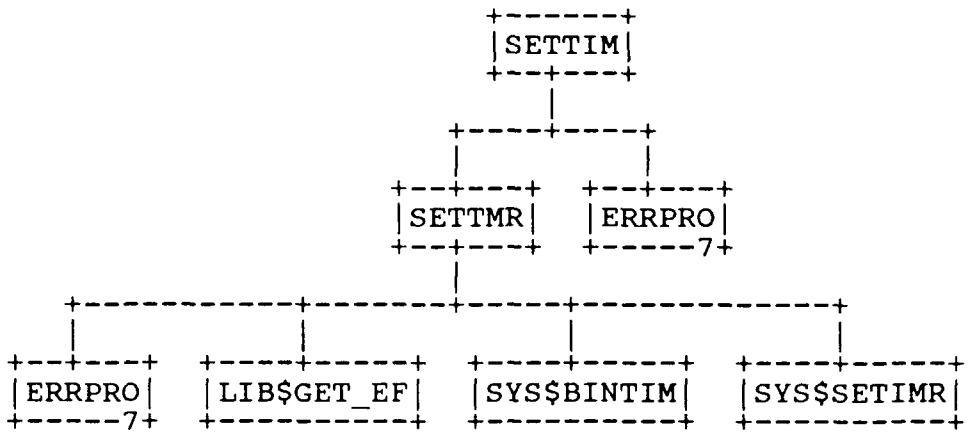
6


(CONT)
1
RCVMSG
8
RELEVB
SETTIM
9
SNDMSG
10
(CONT)
11
SDEACH
4
ERRPRO
7

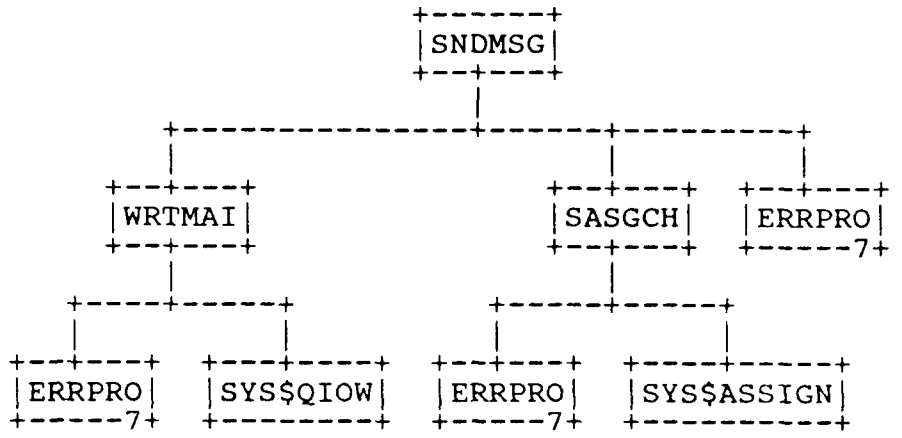
7



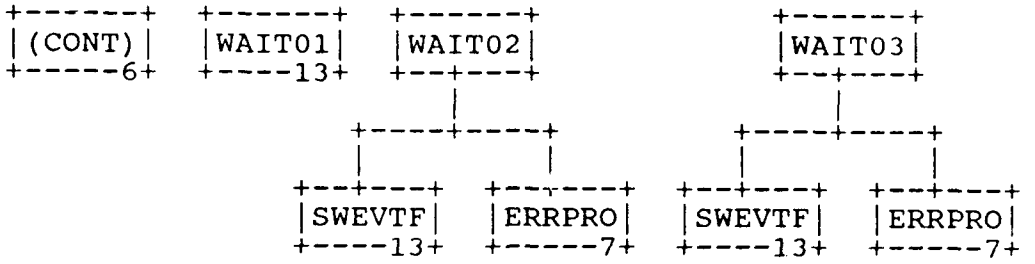

RCVMSG
RDMALF
ERRPRO
ERRPRO
LIB$GET_EF
SYS$QIO


SETTIM
SETTMR
ERRPRO
ERRPRO
LIB$GET_EF
SYS$BINTIM
SYS$SETIMR

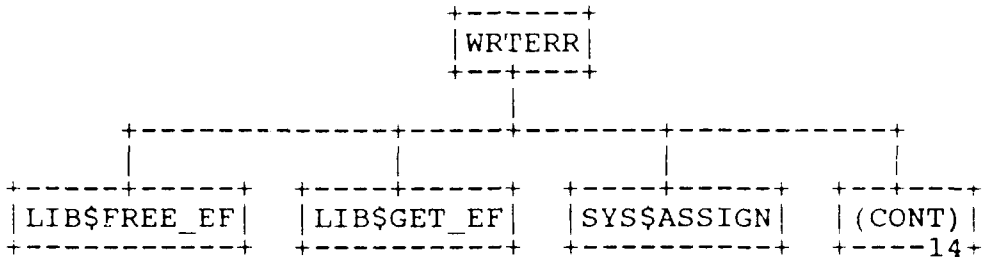
10

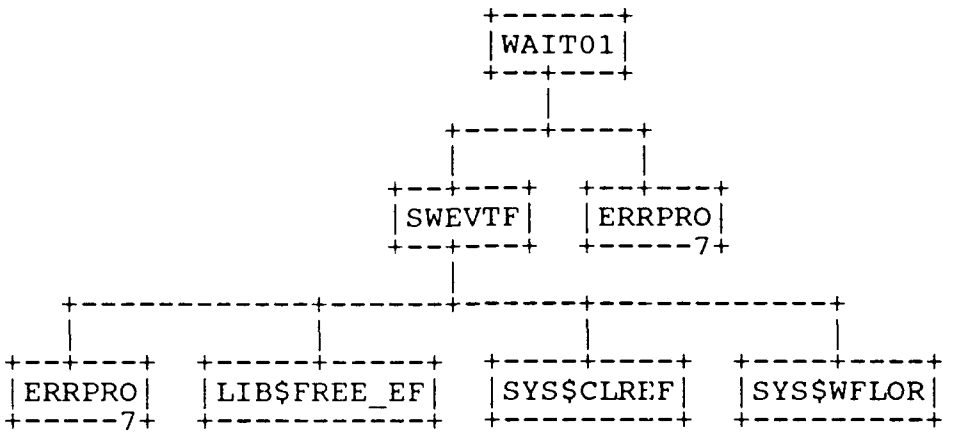

SNDMSG
WRTMAI
SASGCH
ERRPRO
ERRPRO
SYS$QIOW
ERRPRO
SYS$ASSIGN

11

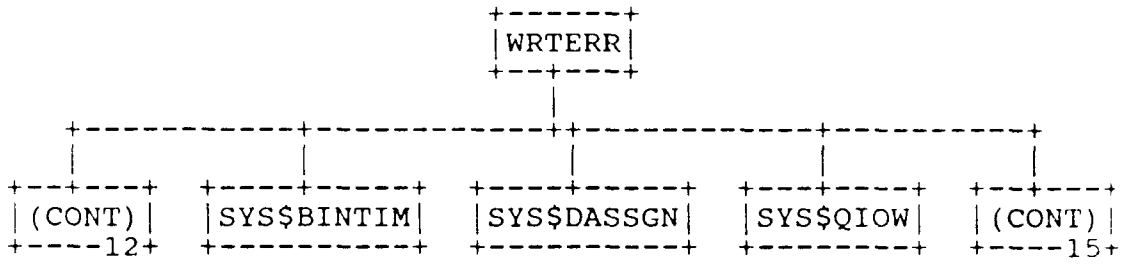

(CONT)
6
WAIT01
13
WAIT02
WAIT03
SWEVTF
13
ERRPRO
7
SWEVTF
13
ERRPRO
7

12

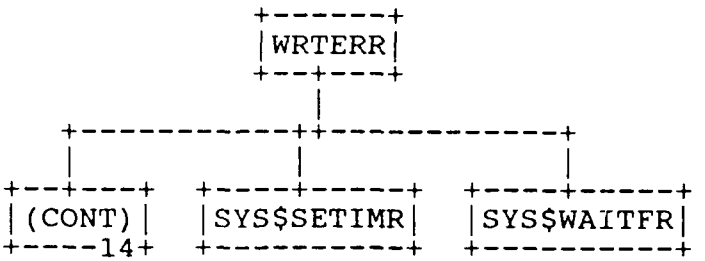



WAIT01
SWEVTF
ERRPRO
ERRPRO
LIB$FREE_EF
SYS$CLREF
SYS$WFLOR

14



15



3.11 Program Listings Comments

This information is contained in the Module Descriptions in section 3.10.

SECTION 4

QUALITY ASSURANCE PROVISIONS

4.1 Introduction and Definitions

"Testing" is a systematic process that may be preplanned and explicitly stated. Test techniques and procedures may be defined in advance, and a sequence of test steps may be specified. "Debugging" is the process of isolation and correction of the cause of an error.

"Antibugging" is defined as the philosophy of writing programs in such a way as to make bugs less likely to occur and when they do occur, to make them more noticeable to the programmer and the user. In other words, as much error checking as is practical and possible in each routine should be performed.

4.2 Computer Programming Test and Evaluation

The quality assurance provisions for test consists of the normal testing techniques that are accomplished during the construction process. They consist of design and code walk-throughs, unit testing, and integration testing. These tests are performed by the design team. Structured design, design walk-through and the incorporation of "antibugging" facilitate this testing by exposing and addressing problem areas before they become coded "bugs."

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